

AMENDMENTS TO THE SPECIFICATION

Please replace Paragraphs 35, 40, 41, 43, 44, 46, 51, 52, 54 and 55 with the following paragraphs rewritten in amendment format:

[0035] Second hydraulic clutch 62 includes a biasing clutch 246 and a clutch actuator 248. Biasing clutch 246 is a multi-plate clutch assembly having a clutch pack 250 of alternately interleaved inner and outer clutch plates that are respectively splined to a clutch hub 252 and drive casing 226. Hub 252 is splined to an axial hub section 254 of first side gear 242. Clutch actuator 248 includes a fluid pump 256 and a piston assembly 258. Pump 256 is a gerotor pump assembly disposed in a pump chamber formed between end cap 228 and a piston housing 260. An eccentric outer ring 262 of gerotor pump 256 and piston housing 260 are fixed for rotation with drive casing 226 via bolts 264. Piston assembly 258 is disposed in a piston chamber 266 formed in piston housing 260. Piston assembly 258 may be similar in function to that of piston assembly 96 such that a control valve (not ~~shown~~) similar to control valve 116 can be used. Seal rings 270 and 272 seal a piston 274 of piston assembly relative to piston housing 260. If piston assembly 258 is similar to piston assembly 96, the hydraulic circuit shown in FIG. 5 would be applicable to illustrate the operation of second hydraulic coupling 62.

[0040] Drive axle assembly 300 includes a multiple-piece axle housing assembly 306 comprised of a drive housing 308, a pump plate 310 and a pump housing 314 secured via bolts 316 to both drive housing 308 and pump plate 310. Axle housing assembly 306 is constructed to define a pump chamber 452, a drive chamber 317 and an a pair of accumulator chambers 410 and 430. A pinion shaft 318 is adapted for

connection to propshaft 28 and is shown to be rotatably supported from axle housing assembly 306 via head bearing assembly 320 and a tail bearing assembly 322. A flange yoke 324 is splined to pinion shaft 318 and retained thereon via a lock nut 326. Flange yoke 324 is adapted to transmit drive torque from propshaft 28 to pinion shaft 318. Pinion shaft 318 extends through the pump chamber 452 of axle housing assembly 306.

[0041] As seen, a pinion gear 328 formed on pinion shaft 318 is located in drive chamber 317 of axle housing assembly 306 and is meshed with a crown or ring gear 330 that is secured to a drive case assembly 332. Drive case assembly 332 includes a cylindrical drum 334, a first clutch housing 336 and a second clutch housing 338. Drum 334 includes a radial flange which mates with a radial flange on first clutch housing 336 such that ring gear 330 is secured thereto via bolts 344. A first output shaft 346 is rotatably supported within first clutch housing 336 while a second output shaft 348 is rotatably supported within second clutch housing 338. Output shafts 346 and 348 are adapted for connection to axleshafts 30 for transmitting drive torque to corresponding ones of rear wheels 30. First clutch housing 336 is shown to be rotatably supported by bearing assembly 350 from drive housing 308 while second clutch housing 338 is similarly supported for rotation by a bearing assembly 352. As such, drive case assembly 332 is supported for rotation relative to each of output shafts 346 and 348.

[0043] First hydraulic coupling 302 is generally similar to hydraulic coupling 44 in that it includes an actuator assembly 372 and a transfer clutch 374. The transfer clutch 374 is a multi-plate clutch assembly operably disposed between drive case assembly 332 and first output shaft 346. In particular, the transfer clutch 374 includes a

hub 384 splined for rotation with first output shaft 346 and a clutch pack 386 of interleaved inner and outer clutch plates splined respectively to hub 384 and drum 334. A separator plate 388 is splined at its outer peripheral surface for rotation with drum 334 and is axially restrained via a pair of snap rings. ~~The~~aActuator assembly 372 is operable to exert a clutch engagement force on clutch pack 386 against separator plate 388 for transferring drive torque from drive case assembly 332 to first output shaft 346. ~~The~~aActuator assembly 372 includes a first piston 392 retained for sliding movement relative to clutch pack 386 within a first pressure chamber 394 defined between drum 334 and first clutch housing 336.

[0044] Second hydraulic coupling 304 likewise includes an actuator assembly 396 and a transfer clutch 398. ~~The~~tTransfer clutch 398 is a multi-plate clutch assembly operably disposed between drive case assembly 332 and second output shaft 348. Specifically, ~~the~~ transfer clutch 398 includes a hub 400 splined for rotation with second output shaft 348 and a clutch pack 402 of interleaved inner and outer clutch plates splined respectively to hub 400 and drum 334. ~~The~~aActuator assembly 396 is operable to exert a clutch engagement force on clutch pack 402 against separator plate 388 for transferring drive torque from drive case assembly 332 to second output shaft 348. ~~The~~aActuator assembly 396 includes a second piston 404 retained for sliding movement relative to clutch pack 402 in a second pressure chamber 406 defined between drum 334 and second clutch housing 338.

[0051] Housing assembly 506 includes a gear housing 508 having an integral bearing support plate 510, a separate bearing support plate 512, and first and second clutch housings 514 and 516. As seen, first clutch housing 514 is secured via bolts 518

to integral bearing support plate 510 of gear housing 508 to define a first clutch cavity chamber 520. Second clutch housing 516 is secured via bolts 522 to bearing support plate 512 to define a second clutch cavity chamber 524. Bolts 522 also secure bearing support plate 512 to gear housing 508. The area between bearing support plates 508 and 512 defines a gear cavity chamber 526. A pump plate 310' and and a pump housing 314' are secured via bolts 316' to gear housing 508 to enclose gear cavity chamber 526 and define a pump chamber 452'. Fluid pump 450' is disposed within pump chamber 452'. Pinion shaft 318' is adapted for connection to propshaft 28 and is rotatably supported by gear housing 508 via a suitable head bearing assembly 320' and tail bearing assembly 322'. Yoke 324' is splined to shaft 318' and permits connection of propshaft 28 to pinion shaft 318', respectively.

[0052] A pinion gear 328' formed on pinion shaft 318' is meshed with a crown or ring gear 330' that is secured to a drive hub 528 via bolts 530. Crown gear 330' and hub 528 together define a drive assembly 531. Ring gear 330' has a tubular sleeve segment 532 rotatably supported by a bearing assembly 534 from integral bearing support plate 508. Likewise, hub 528 has a sleeve segment 536 that is rotatably supported from bearing support plate 512 via a bearing assembly 538. As constructed, bearings 320', 322', 534 and 538 are lubricated by the fluid entrained in gear cavity chamber 526. A pair of rotary seal rings 540 540A and 540B provide a fluid-tight seal between gear cavity chamber 526 and each of first and second clutch cavities chambers 520 and 524.

[0053] A first output shaft 346' is supported for rotation relative to first clutch housing 514 via a bearing assembly 542 and for rotation relative to drive assembly 351

via a journal bearing 544. Similarly, a second output shaft 348' is supported for rotation relative to second clutch housing 516 via a bearing assembly 546 and for rotation relative to drive assembly 351 via a journal bearing 548. First output shaft 346' is adapted for connection to one of axleshafts 30 while second output shaft 348 is adapted for connection to the other one of axleshafts 30.

[0054] Drive axle assembly 500 includes a first actively-controlled hydraulic coupling 502 operably disposed between first output shaft 346' and drive assembly 351 and a second actively-controlled hydraulic coupling 504 operably disposed between second output shaft 348' and drive assembly 351. First coupling 502 and second coupling 504 use identical components such that only those associated with first coupling 502 will be detailed with common reference numerals having "A" and "B" suffixes being used for each corresponding coupling. First coupling 502 includes an actuator assembly 549A and a transfer clutch 551A. ~~The~~^atTransfer clutch 551A is a multi-plate clutch assembly including a hub 550A splined for rotation with first output shaft 346', a drum assembly 552A splined for rotation with drive assembly 351, and a clutch pack 554A therebetween. Drum assembly 552A includes a cylindrical drum 556A, a coupler hub 558A splined to sleeve segment 532 of ring gear 330', and a connector plate 560A rigidly interconnecting drum 556A to coupler hub 558A. Seal ring 540A is shown to be installed between an annular rim of bearing support plate 508 and coupler ring 558A and located between bearing assembly 534 ~~a~~and connector plate 560A. ~~The~~^atActuator assembly 549A includes a piston ring 562A retained for sliding movement in an annular pressure chamber 564A formed in first clutch housing 514, a

pressure plate 566A acting on clutch pack 554A, and a thrust bearing 568A therebetween.

[0055] Housing assembly 506 defines a series of flow passages to provide a fluid circuit between a sump of a second type of fluid from which hydraulic pump 450' draws and delivers this second fluid at pump pressure to first and second control valves 412' and 432' correspondingly associated with first and second coupling 502 and 504. The second fluid is used to actuate the transfer clutches and cool/lubricate their clutch packs. An accumulator passage 414' is formed to extend through each of the housing sections of housing assembly 506 which is provided with pump pressure P_G generated by pump 450' in response to rotation of pinion shaft 318'. An accumulator assembly 570, shown in phantom in FIG. 12, communicates with passage 414' and includes spring-biased accumulator assemblies 456' (not shown) for maintaining a desired fluid pressure in passage 414'. The relationship of accumulator assembly 570 to pinion gear 328' is shown by circle 572 which indicates the location of pinion gear 328' within gear cavity chamber 526. It is contemplated that the hydraulic circuit shown in FIG. 10 is again applicable for use with drive axle assembly 500.